



BELT ACID MINE DRAINAGE WATER TREATMENT PLANT



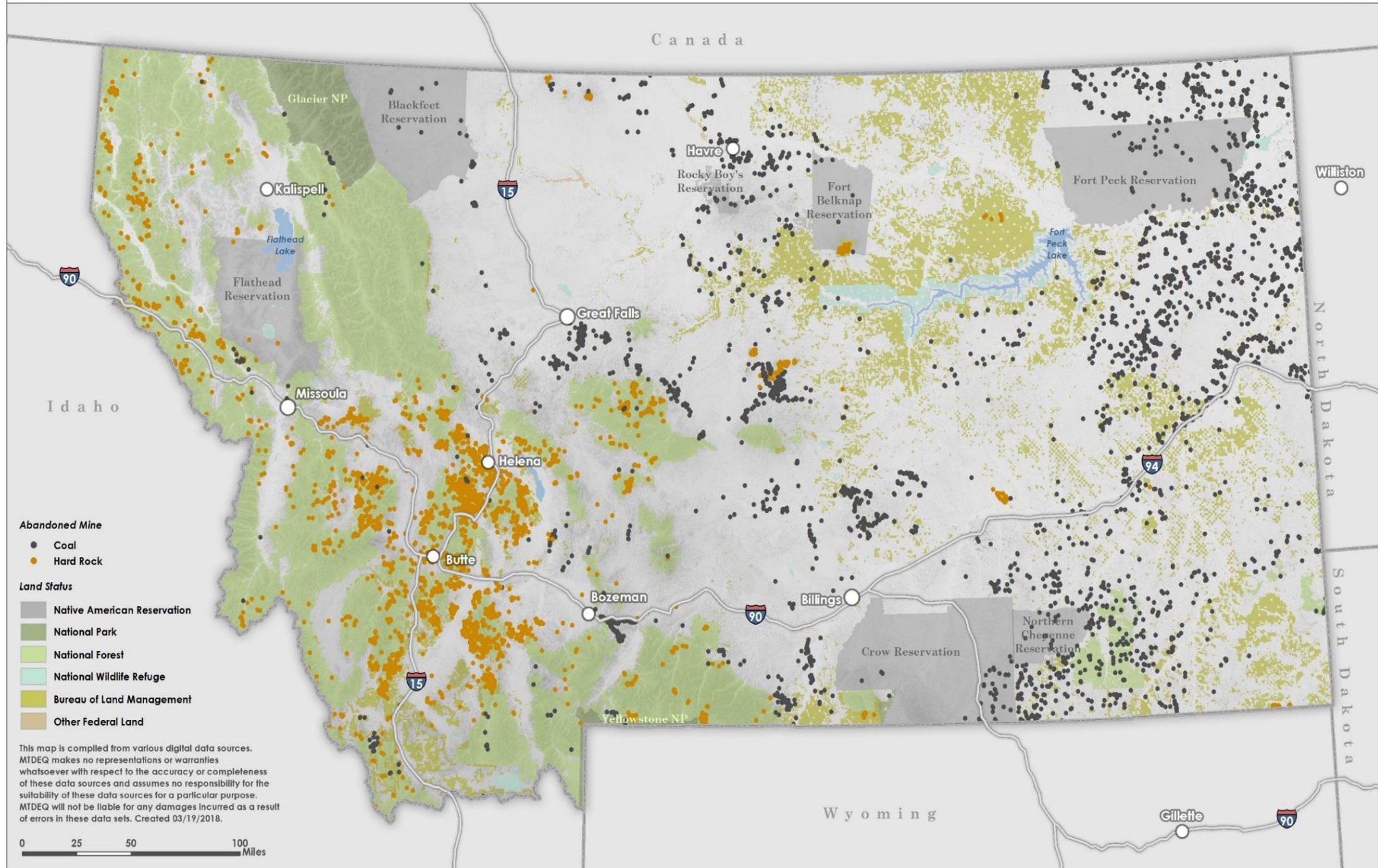
Agenda

- Abandoned Mines in Belt
- The Objective for Cleanup
- Water Treatment Progress and Next Steps
- DEQ Property
- French Coulee Ponds and Lewis Coulee
- Questions/Comments





State of Montana Abandoned Mine Land Sites







Historical Coal Mining and Coking



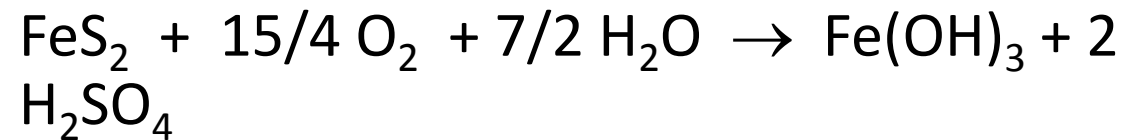
Photo from K. Maki

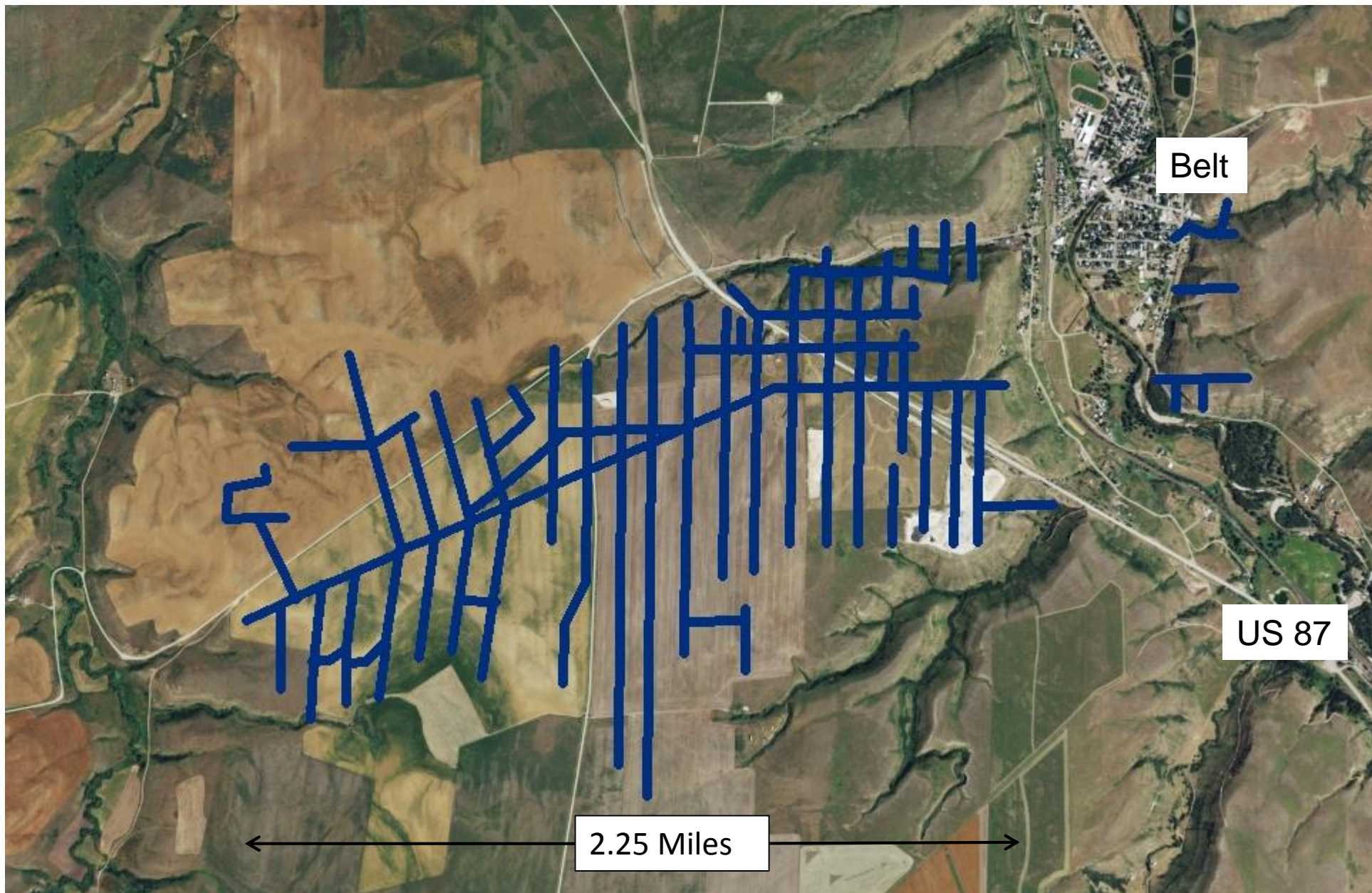
Anaconda Coal Mine

Chemistry Of Pyrite Weathering: The Acid-Forming Process

Summary Reaction For Pyrite Weathering

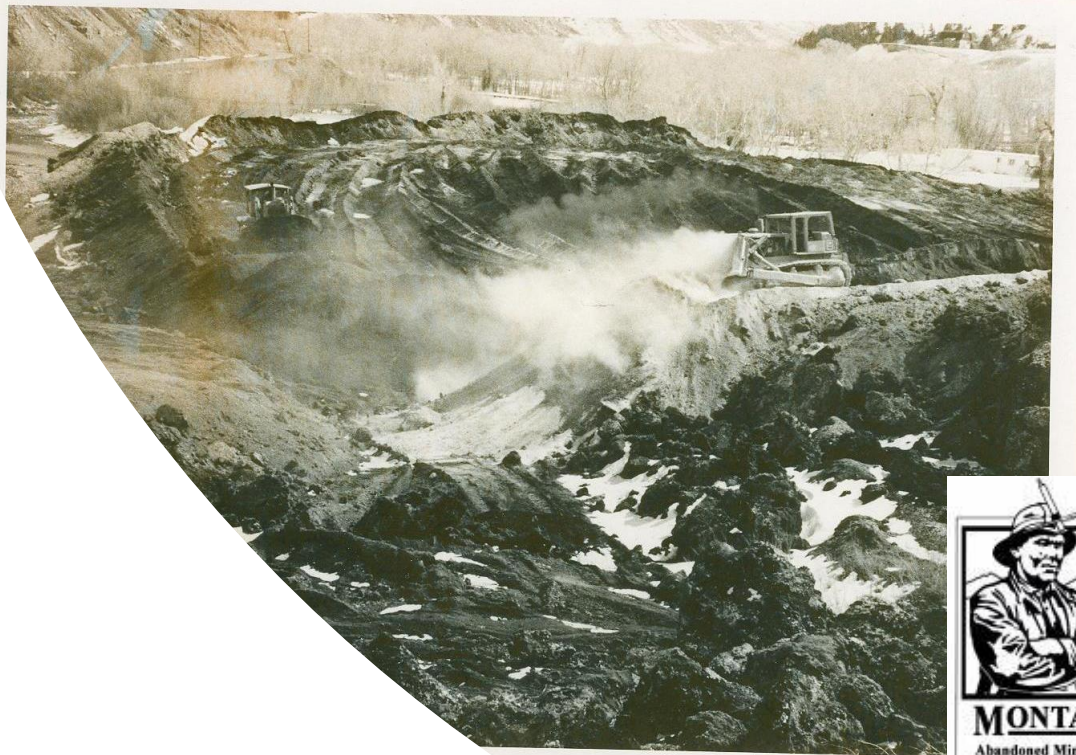
Pyrite + Oxygen + Water → Iron Hydroxide +
Sulfuric Acid





Anaconda Mine Workings in Belt

Coke Oven Flats Prior to 1980s Reclamation





1980s reclamation

Mine water discharges

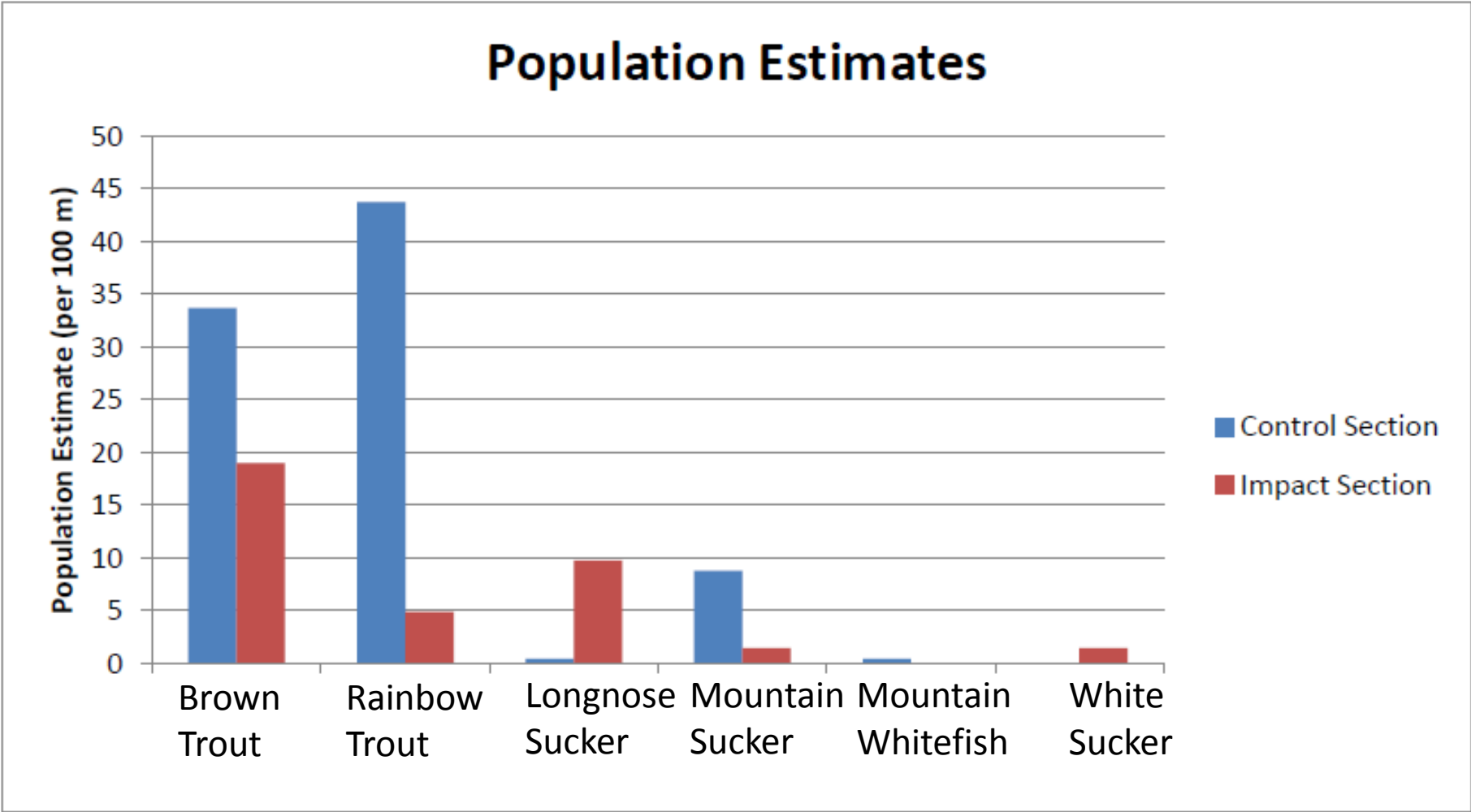
Belt Creek Water Quality

Exceeds:

- Aluminum
- cadmium
- iron
- nickel
- zinc



2015 Fish, Wildlife & Parks Investigation

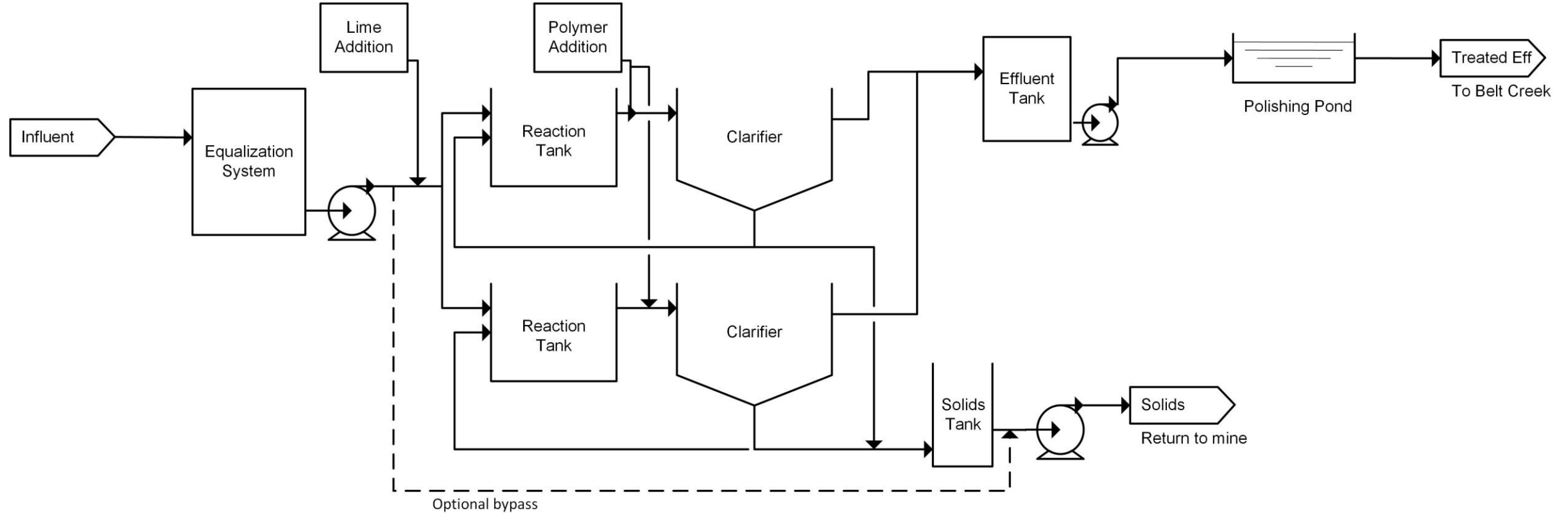




Belt Water Treatment Plant Engineering Design Update

- Finishing 30% Design
- Treatment Type:
 - Single Stage Lime Treatment
- Sludge Management
 - Injection Into Underground Workings

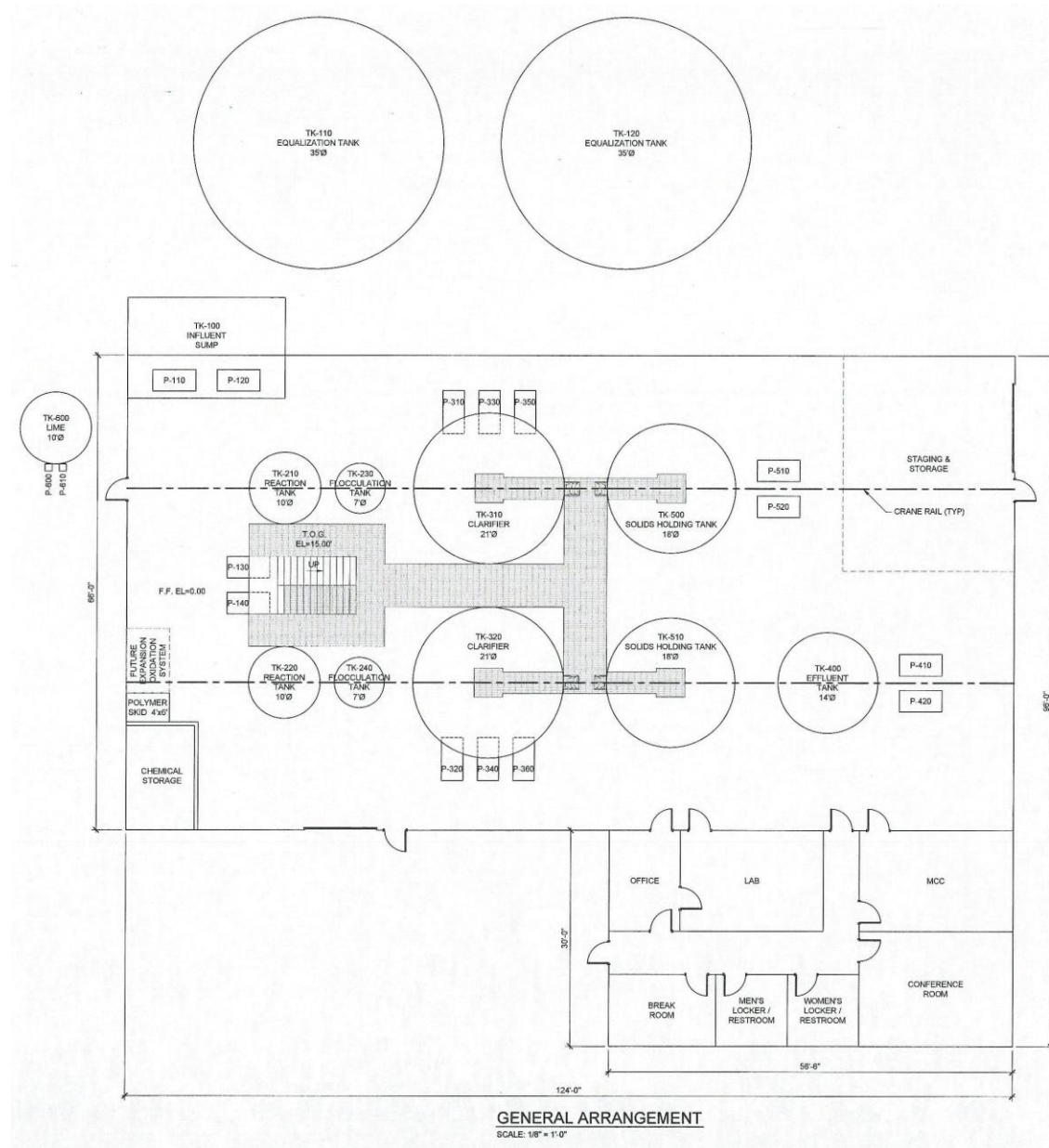
Single Stage Lime Treatment

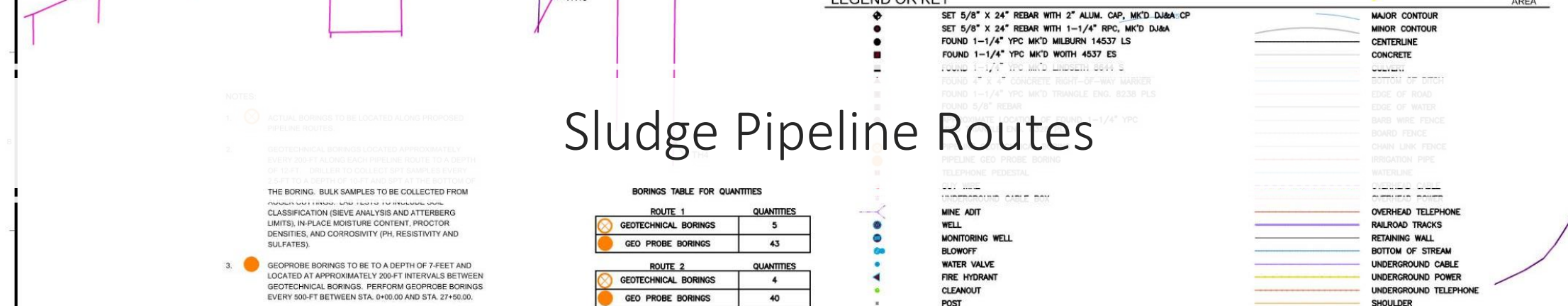












Single Stage Lime Treatment

Potential Belt Water Treatment Plant Layout





BORINGS TABLE FOR QUANTITIES	
ROUTE 1	QUANTITIES
 GEOTECHNICAL BORINGS	5
 GEO PROBE BORINGS	43
ROUTE 2	QUANTITIES
 GEOTECHNICAL BORINGS	4
 GEO PROBE BORINGS	40

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Baseline R

SET 5/8" X 24" REBAR WITH 2" ALUM. CAP, MK'D DJ&A CP
SET 5/8" X 24" REBAR WITH 1-1/4" RPC, MK'D DJ&A
FOUND 1-1/4" YPC MK'D MILBURN 14537 LS
FOUND 1-1/4" YPC MK'D WOITH 4537 ES
FOUND 1-1/4" YPC MK'D LINDEM 5044 S
FOUND 4" X 4" CONCRETE RIGHT-OF-WAY MARKER
FOUND 1-1/4" YPC MK'D TRIANGLE ENG. 6238 PLS
FOUND 5/8" REBAR
PERMANENT LOCATION OF FOUND 1-1/4" YPC
PIPELINE GED PROBE BORING
TELEPHONE PEDESTAL
SEE PLAN
UNDERGROUND CABLE BOX
MINE ADIT
WELL
MONITORING WELL
BLOWOFF
WATER VALVE
FIRE HYDRANT
CLEANOUT
POST

- MAJOR CONTOUR
- MINOR CONTOUR
- CENTERLINE
- CONCRETE
- CUTTING
- SECTION OF DRAIN
- EDGE OF ROAD
- EDGE OF WATER
- BARB WIRE FENCE
- BOARD FENCE
- CHAIN LINK FENCE
- IRRIGATION PIPE
- WATERLINE
- RAILROAD TRACKS
- OVERHEAD TELEPHONE
- RETAINING WALL
- BOTTOM OF STREAM
- UNDERGROUND CABLE
- UNDERGROUND POWER
- UNDERGROUND TELEPHONE
- SHOULDER

[illegible]

DEQ
Montana Department of Environmental Quality

DRAFT
NOT FOR CONSTRUCTION



TETRA TECH

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Design Status

Water Treatment Plant Components Under Design or Study:

- Building Type/Layout
- Process Layout
- Electrical/Pumps/Controls Design
- Figuring out the best way to capture groundwater at Coke Oven Flats
- Site Civil Design
- Sludge Testing
- Settling Pond design

Sludge Injection Pipeline Under Design or Study:

- Pipeline Route
- Pipeline Sizing
- Sludge Testing
- Pump Selection
- Power and Controls Design

Coming up.....

Treatment Plant

- Site Layout Design
- Building Planning
- Lewis Coulee Flow Monitoring
- Injection Design Investigation for Millard Mine
- Conceptual Design Completion

Sludge Injection

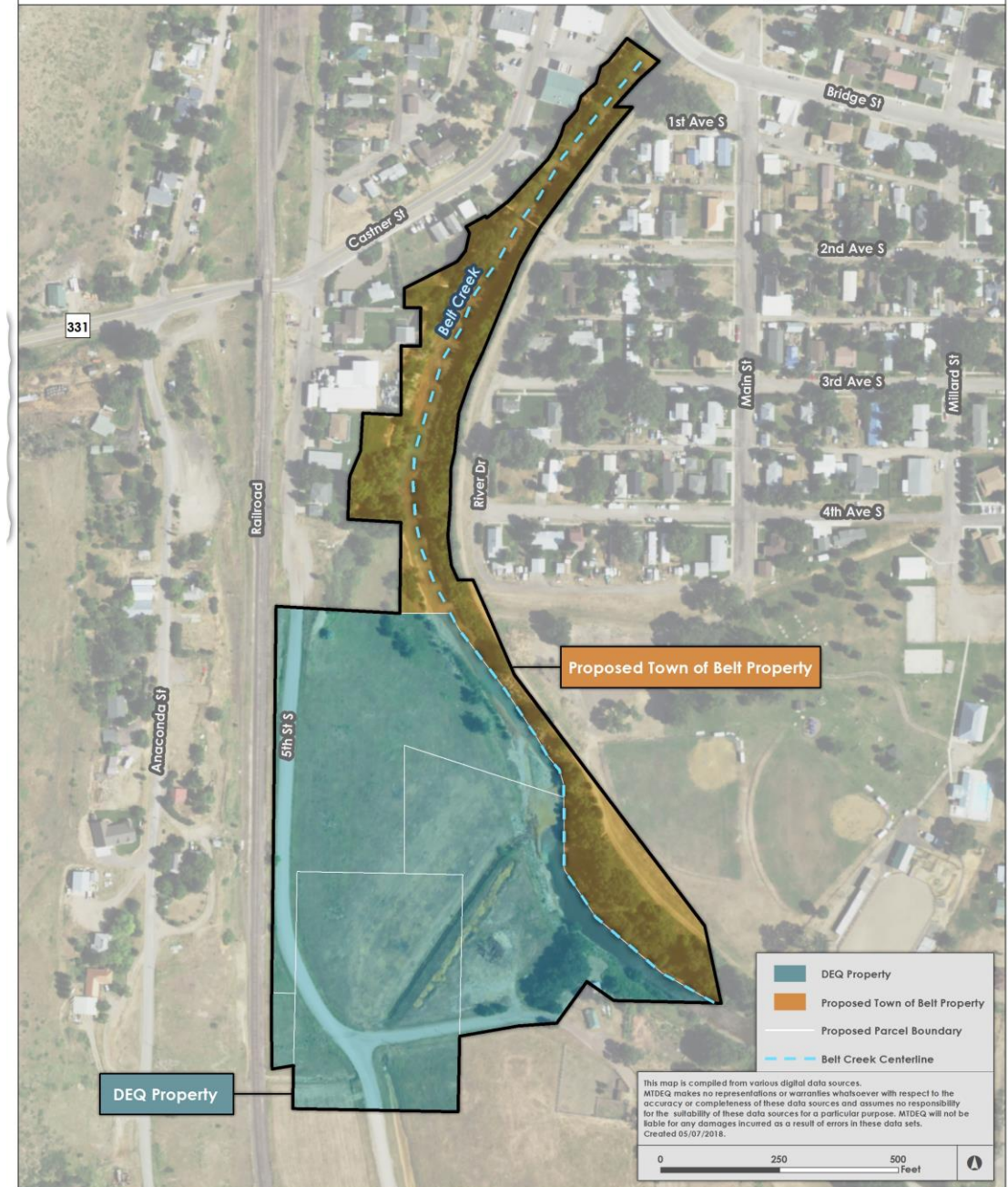
- Reporting on latest mine pump test
- Well casing and grouting
- Test sludge injecting with water
- Pipeline route soil testing



Progress

DEQ Property

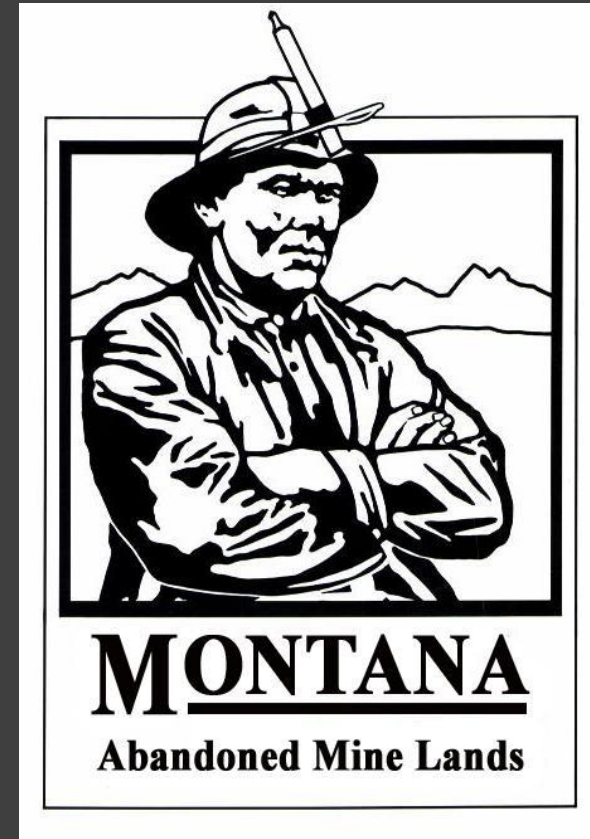
- Former MDT Property at Coke Oven Flats
- Boundary Adjustment
- Transfer to City of Belt
- Quiet Title Action







Lewis Coulee and Castner Park



Thank You

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